

PMGrabber

Hardware Manual

Revision 1A

Revision History

Revision	Changes	Date
1A	First Edition, valid for Hardware revision 1A,	03.01.2000 AR

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1 Specification

1.1 Main Features

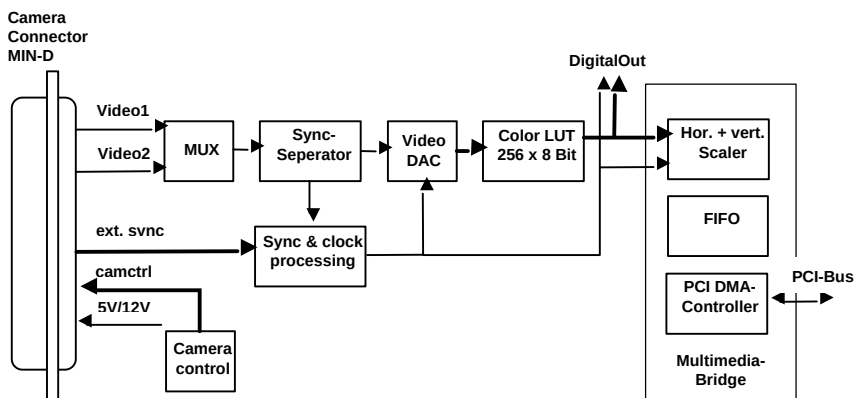
- Two b/w camera inputs for CCIR 625, EIA 525 and non-standard cameras
- PixelClock input
- Opto-decoupled trigger input
Camera control outputs for camera restart and shutter
- 8 Bit look-up table
- Real-time aquisition of images or image sequences directly into main memory of host computer
- 8 Bit DigitalOut, intended for use with PMViewer
- Single size PMC module
- Power supply for cameras (5V/12V)
- PCI 2.1 compliant
- General Description

The PMGrabber is designed to work on a BAB740 (V-BAB.-740) with additional PMC Carrier (V-PMCE-740) . At this time no further platform is specified. Please contact ELTEC for more information.

1.2 Technical Details

The PMGrabber is a Framegrabber for a PCI Mezzanine Card system. The Grabber based on the PC_EYE[®] 4, and is intended for use with the BAB740 board with additional PMC Carrier (PMCE740).

Figure 1-1: Block Diagram



Cameras are connected via the 15pol.MIN-D connector X601 at the front of the module. The connector provides all video signals, including camera control and power.

An input multiplexer permits the use of up to two cameras. The input signal is separated into sync- and videodata, so the sync- and clock signals for videoprocessing can be processed to handle a variety of cameras.

The videodata are digitized in an 8-bit A/D-converter and converted by a LUT with 256 8-bit entries. A small videoprocessor inside the Multimedia Bridge SAA 7146 permits hardware scaling. Videodata are transferred

directly into the main memory of the host computer. With the optional PMView graphic module, the digitized data can also be transferred into the graphics memory via the DigitalOut Connector without loss in performance. The framegrabber does not have an own image memory apart from a FIFO to decouple the videostream from the DMA transfer.

The PMGrabber is capable of generating horizontal and vertical or composite sync signals or up to five programmable control signals (up to two signals at the MIN-D connector). For this purpose the on-board sequencer is used to generate control sequences for camera restart, shutter and flash control.

An opto-coupled trigger input can be used to synchronize the acquisition and the transfer of image data to external events.

2 Connectors

Figure 2-1: Jumper and connector locations

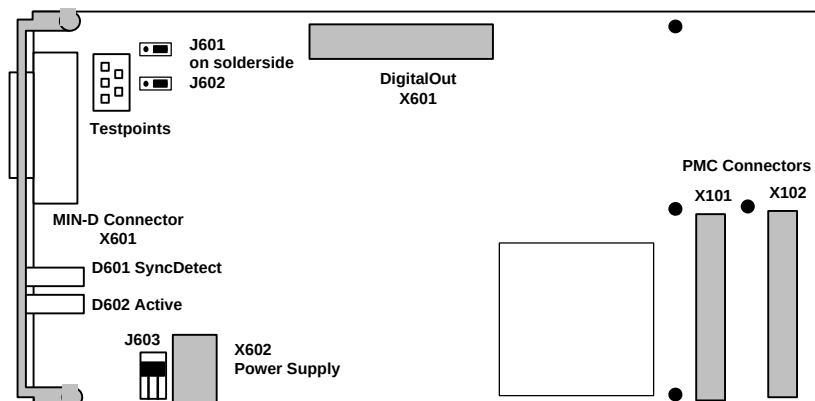


Table 2-1: PMC Connector X101, X102

X101			
Pin#	Signalname	Signalname	Pin#
1	nc	-12V	2
3	Ground	INTA#	4
5	nc	nc	6
7	nc	+5V	8
9	nc	nc	10
11	Ground	nc	12
13	CLK	Ground	14
15	Ground	GNT#	16
17	REQ#	+5V	18
19	V(I/O)	AD[31]	20
21	AD[28]	AD[27]	22
23	AD[25]	Ground	24
25	Ground	C/BE[3]#	26
27	AD[22]	AD[21]	28
29	AD[19]	+5V	30
31	V(I/O)	AD[17]	32
33	FRAME#	Ground	34
35	Ground	IRDY#	36
37	DEVSEL#	+5V	38
39	Ground	nc	40
41	nc	nc	42
43	PAR	Ground	44
45	V(I/O)	AD[15]	46
47	AD[12]	AD[11]	48
49	AD[09]	+5V	50
51	Ground	C/BE[0]#	52
53	AD[06]	AD[05]	54
55	AD[04]	Ground	56
57	V(I/O)	AD[03]	58
59	AD[02]	AD[01]	60
61	AD[00]	+5V	62
63	Ground	nc	64

X102			
Pin#	Signalname	Signalname	Pin#
1	+12V	nc	2
3	nc	nc	4
5	nc	Ground	6
7	Ground	nc	8
9	nc	nc	10
11	nc	+3.3V	12
13	RST#	nc	14
15	3.3V	nc	16
17	nc	Ground	18
19	AD[30]	AD[29]	20
21	Ground	AD[26]	22
23	AD[24]	+3.3V	24
25	IDSEL	AD[23]	26
27	+3.3V	AD[20]	28
29	AD[18]	Ground	30
31	AD[16]	C/BE[2]#	32
33	Ground	nc	34
35	nc	+3.3V	36
37	Ground	STOP#	38
39	PERR#	Ground	40
41	+3.3V	SERR#	42
43	C/BE[1]#	Ground	44
45	AD[14]	AD[13]	46
47	Ground	AD[10]	48
49	AD[08]	+3.3V	50
51	AD[07]	nc	52
53	+3.3V	nc	54
55	nc	Ground	56
57	nc	nc	58
59	Ground	nc	60
61	nc	+3.3V	62
63	Ground	nc	64

Table 2-2: DigitalOut connector X201

X201			
Pin#	Signalname	Signalname	Pin#
1	DataOut(0)	DataOut(1)	2
3	DataOut(2)	DataOut(3)	4
5	DataOut(4)	DataOut(5)	6
7	DataOut(6)	DataOut(7)	8
9	Reserved (D8)	Reserved (D9)	10
11	Reserved (D10)	Reserved (D11)	12
13	Reserved (D12)	Reserved (D13)	14
15	Reserved (D14)	Reserved (D15)	16
17	Ground	Ground	18
19	HSyncOut	Ground	20
21	Ground	PixClkOut	22
23	VSynOut	Ground	24
25	Ground	Reserved	26
27	Reserved	Reserved	28
29	Reserved	Reserved	30

The DigitalOut Port is only for connection with a PMViewer, no further use allowed.

Table 2-3: Power Connector X602

X602			
Pin#	Signalname	Signalname	Pin#
1	+5V	Ground	2
3	Ground	+12V	4

If you intend to supply your camera from the PMGrabber, the internal floppy type connector X602 has to be used. Use the cable (H-PMGR-800A) coming with the module to establish a connection with the appropriate connector on the PMC Carrier. With Jumper J603 (see next chapter) you can select either 5V or 12V as power supply on Pin 15 of the MIN-D camera connector.

Table 2-4: MIN-D connector X601

X601			
Pin#	Signalname	Signalname	Pin#
1	Video1 IN	Video2 IN	2
3	nc	nc	4
5	Ground	Ground	6
7	Ground	Ground	8
9	Trigger IN +	Ground	10
11	Trigger IN -	PixelClock IN	12
13	Out1 *)	Out2 OUT	14
15	5V/12V OUT		

* Please refer to Table 4-1

The connector X601 has the same mechanical apperance as an VGA video output connector. It should not be confused with the latter. To avoid damage to the hardware, do not connect a VGA monitor to X601. On Pin 15 of X601 either +5V or +12V are delivered to power the video camera. The current that can be drawn from this pin is limited by a PTC resistor (I_{max} ca. 500mA). Be sure not interchange 5V an 12V output, this may cause damages of PMGrabber or video camera.

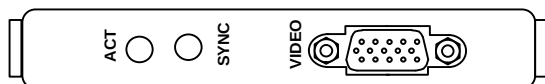
3 Control LED

The PMGrabber has two LED that show activation of PMGrabber and the existence of a sync signal at the camera input.

The LED ACT is controlled by software. The software activates this LED with the first access to PMGrabber and has to deactivate it with the last access.

The SYNC LED shows activity on the internal vsync line, if the grabber is activated. So you have a easy way to control the camera video output and the use of the right input channel.

Figure 3-1: PMGrabber Frontpanel



4 Configuring the PMGrabber

The PMGrabber has 3 jumper for configuring the module for your special purpose. There are one jumper (J603) for the power supply of the camera and two solder jumper (J601,J602) to control the function of the dual purpose Pins 13 (Out1) und 14 (Out2) on the camera connector (X601). The PMGrabber is capable of generating different video synchronisation signals and timings. With these jumpers you can either select one of the programmable sync generator (Hsync, CVSync) outputs or one of the sequencer controlled output to be routed on the appropriate dualpurpose pin on the camera connector. Default setting allows the use of the 2 sync generator outputs at the MIN-D Connector.

It is not recommended to replace these jumpers. Damages of board may occur.

Table 4-1: Solder Jumper J601, J602 (Dual purpose pins on MIN-D)

J601 MIN-D Pin 14	
1 - 2	Hsync
2 - 3	CameraControl 1

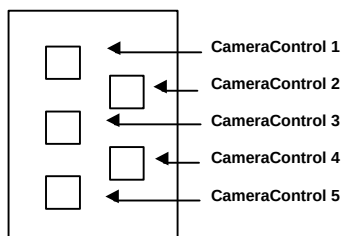
J602 MIN-D Pin 13	
1 - 2	CVSync
2 - 3	CameraControl 2

Table 4-2: Jumper J603 (Power for camera, max . 500mA)

J603 MIN-D Pin 15	
-	no power
1 - 2	+12V
2 - 3	+5V

4.1 Testpoints

Figure 4-1: Testpoints TP601 - TP605



For testing purpose you can use the TP1 - TP5 pads for a soldered connection of the five sequencer controlled outputs. It is not recommended to use these pads for permanent connections. Please contact ELTEC if you want to use this outputs.

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